

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method for selecting a resultant mode of operation for at least two modems that communicate via a communications network, comprising:

(a) performing a handshake procedure to determine a set of possible modes of operation supported by the at least two modems, the set of possible modes of operation including protocol standards and annexes that are supported by the at least two modems;

(b) ~~deriving a set of favorable modes of operation from the set of possible modes of operation~~ selecting a first set of favorable modes of operation from among the set of possible modes of operation using a first level of priority-based selection based on priorities assigned to the annexes;

(c) selecting a second set of favorable modes of operation from among the first set of favorable modes of operation using a second level of priority-based selection based on priorities assigned to the protocol standards; and

[[(c)]] (d) in case there exist two or more second favorable modes of operation from among said second set of favorable modes of operation, performing a probing-based selection by evaluating respective performances of each of the second favorable modes of operation and selecting a second favorable mode of operation with a best performance from among the second set of favorable modes as the resultant mode of operation.

2. (Previously Presented) The method of claim 1, wherein the protocol standard is selected from a group consisting of: G.992.1, G.992.2, G.992.3, G.992.4, and G.992.5.

3. (Currently Amended) The method of claim 2, ~~in which~~ wherein step (a) comprises:

(a)(i) performing the handshake procedure to determine the set of possible modes of operation supported by the at least two modems, the set of possible modes of operation being related to particular annexes of the protocol standard.

4. (Cancelled)

5. (Currently Amended) The method of claim ~~[[4]]~~ 1, wherein step ~~[[b)(i)]]~~ (b) comprises:

~~[[b)(i)(A)]]~~ (b)(i) selecting ~~[[a]]~~ the first set of favorable modes of operation from among the set of possible modes of operation using ~~[[a]]~~ the first level of priority-based selection based on priorities assigned to different classes of upstream tone usage.

6. (Previously Presented) The method of claim 5, wherein the different classes of upstream tone usage comprise, in descending order of priority, annex J type, annex B type, and annex A type.

7. (Currently Amended) The method of claim 5, wherein ~~step (b)(i)(A)~~ comprises: ~~(b)(i)(A)(1) selecting the first set of favorable modes of operation from among the set of possible modes of operation using a first level of priority-based selection based on priorities assigned to different classes of upstream tone usage; one or more of the different classes of upstream tone usage being~~ are excluded from the first level of priority-based selection.

8. (Cancelled)

9. (Currently Amended) The method of claim ~~[[8]]~~ 1, wherein the various protocol standards are prioritized in a descending order of priority, at least one of the various protocol standards being selected from a group consisting of: G.992.5, G.992.4, G.992.3, G.992.1, G.992.2, and non-ITU standards.

10. (Previously Presented) The method of claim 9, wherein the G.992.3, the G.992.4, and the G.992.5 standards are assigned a similar priority.

11. (Currently Amended) The method of claim 1, wherein step ~~[[c)]]~~ (d) comprises:

~~[[[(c)(i)]]~~ (d)(i) initialising the at least two modems to a probing mode of operation when the two or more second favorable modes of operation exist.

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12. (Currently Amended) The method of claim 11, wherein step [(c)(i)] (d)(i) comprises:

[(c)(i)(A)] (d)(i)(A) initialising the at least two modems to a diagnostic mode of operation when the two or more second favorable modes of operation exist.

13. (Currently Amended) The method of claim [[11]] 1, wherein step [(c)] (d) comprises:

[[[(c)(i)]] (d)(i) measuring a condition of the communications network; and

[[[(c)(ii)]] (d)(ii) determining a signal-to-noise ratio of the communications network using the condition.

14. (Currently Amended) The method of claim 1 wherein step [(c)] (d) comprises:

[[[(c)(i)]] (d)(i) estimating a condition of the communications network; and

[[[(c)(i)]] (d)(ii) determining a signal to noise ratio of the communications network using the condition.

15. (Currently Amended) The method of claim 1, wherein step [(c)] (d) comprises:

[[[(c)(i)]] (d)(i) determining at least one of an upstream bit rate and a downstream bit rate for each of the second favorable modes of operation.

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16. (Currently Amended) The method of claim 1, wherein step [(c)] (d) comprises:

[(c)(i)] (d)(i) determining a performance index indicating the respective performances for each of the second favorable modes of operation.

17. (Currently Amended) The method of claim 16, wherein step [(c)(i)] (d)(i) comprises:

[(c)(i)(A)] (d)(i)(A) deriving the performance index indicating the respective performances for each of the second favorable modes of operation from line conditions of the communications network.

18. (Currently Amended) ~~The method of claim 15, wherein step (e)(i) comprises:~~ A method for selecting a resultant mode of operation for at least two modems that communicate via a communications network, comprising:

(a) performing a handshake procedure to determine a set of possible modes of operation supported by the at least two modems, the set of possible modes of operation including protocol standards and annexes that are supported by the at least two modems;

(b) deriving a set of favorable modes of operation from the set of possible modes of operation; and

(c) in case there exist two or more favorable modes of operation, determining a performance index indicating the respective performances for each of the favorable modes of (e)(i)(A) determining a performance index (PI) for each of the favorable modes of operation according to:

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$$PI = \alpha_d \cdot (DS - DS_{\min}) + \alpha_u \cdot (US - US_{\min}),$$

wherein DS and US denote the downstream and the upstream bit rate, respectively, DS_{\min} and US_{\min} denote the minimum downstream and the minimum upstream bit rate, respectively, and α_d and α_u denote weight factors, and selecting at least one of the set of favorable modes based upon the performance index as the resultant mode of operation.

19. (Currently Amended) The method of claim 16, wherein step [(c)] (d) further comprises:

[[[(c)(ii)]] (d)(ii)] selecting the second favorable mode of operation with a highest performance index as the resultant mode of operation.

20. (Currently Amended) The method of claim 16, wherein step [(c)] (d) further comprises:

[(c)(ii)] (d)(ii) determining a secondary performance index when all of performance indices from among the performance index are equal to a maximum; and

[(c)(iii)] (d)(iii) evaluating the secondary performance index for each of the second favorable modes of operation.

21. (Currently Amended) The method of claim 11, wherein step [(c)] (d) further comprises:

[(c)(ii)] (d)(ii) deciding whether to re-initialise the at least two modems before data transmission is started.

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22. - 23. (Cancelled)

24. (Currently Amended) A modem unit for transmitting data via a communications network, comprising:

a transmission unit configured to perform a handshake procedure to determine a set of possible modes of operation, the set of possible modes of operation including protocol standards and annexes that are supported the modem unit, [[and]] to derive a first set of favorable modes of operation from among the set of possible modes of operation using a first level of priority-based selection based on priorities assigned to the annexes, and to derive a second set of favorable modes of operation from among the first set of favorable modes of operation using a second level of priority-based selection based on priorities assigned to the protocol standards; and

a probing facility configured to perform a probing-based selection that comprises evaluating respective performances of said second favorable modes of operation from among said second set of favorable modes of operation when two or more second favorable modes of operation exist and to select a second favorable mode of operation with a best performance as a resultant mode of operation.

25. (Previously Presented) The modem unit of claim 24, wherein the modem unit is configured to support a protocol standard selected from the group consisting of at least one of the protocol standards: G.992.1, G.992.2, G.992.3, G.992.4, G.992.5.

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26. (Previously Presented) The modem unit of claim 24, wherein the modem unit is implemented as part of either a central xDSL modem or a remote xDSL modem.

27. (Cancelled)

28. (Currently Amended) The modem unit of claim ~~[[27]]~~ 24, ~~in which the priority-based selection comprises:~~ wherein said ~~[[a]]~~ first level of priority-based selection for selecting ~~[[a]]~~ said first set of favorable modes of operation from among the set of possible modes of operation is based on priorities assigned to different classes of upstream tone usage.

29. (Cancelled)

30. (Previously Presented) The modem unit of claim 24, wherein the probing facility is further configured to initialise the modem unit to a probing mode of operation to perform the probing-based selection.

31. (Previously Presented) The modem unit of claim 24, wherein the probing-based selection comprises:

determining line conditions of the communications network; and

determining a signal-to-noise ratio of the communications network based upon the line conditions.

32. (Currently Amended) The modem unit of claim 24, wherein the probing facility is further configured to determine a performance index indicating the respective performances for each of the second favorable modes of operation when two or more second favorable modes of operation exist.

33. (Currently Amended) The modem unit of claim 32, wherein the probing facility is configured to select the second favorable mode of operation with a highest performance index as the resultant mode of operation when two or more second favorable modes of operation exist.

34. (Previously Presented) The modem unit of claim 24, wherein the probing facility is configured to decide whether the modem unit has to be re-initialised before data transmission is started.

35. (Cancelled)

36. (Cancelled)